Treatment Protocol Effectiveness Study

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Barry R. McCaffrey, Director

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Acknowledgements

The objective of this White Paper is to report the state of the science of measurement of drug abuse treatment services outcome and to guide future research efforts, after carefully considering relevant clinical and health services research experience. To this end, the Office of National Drug Control Policy convened a panel of clinicians, researchers, and administrators to guide the review of past research and experience and to recommend appropriate, reliable measures of treatment effectiveness.

The talent, dedication, and thoughtful participation of the panel members, the Treatment Outcome Working Group, has provided a foundation upon which clinicians, administrators, and researchers can build future research and demonstrate the benefits of effective treatment approaches. ONDCP gratefully acknowledges all those individuals who served this effort.

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TREATMENT PROTOCOL EFFECTIVENESS STUDY

Drug dependence is a chronic, relapsing disorder requiring specialized treatment. Breaking the cycle of dependence is difficult at best, and hardcore drug users often suffer extreme physical, psychological, emotional, economic, and social pain. In many ways, hardcore drug users are isolated from society. Their addiction affects not only them but also their families and friends as well as the larger community (Office of National Drug Control Policy [ONDCP], 1994).

Drug abuse treatment is the process of breaking an individual's dependence on illicit drugs (e.g., heroin and cocaine) or licit drugs (e.g., alcohol and prescription medications). Although the term "drug abuse treatment" implies a single entity, in fact it is a complex and variable network of services tailored to meet the multiple needs of the individual. Drug abuse treatment can take place in hospitals; long-term residential treatment programs; walk-in clinics; and counseling centers, psychotherapists' offices, and church basements. The choice of setting and the type of treatment selected by or mandated for the individual depends on such factors as the drug of addiction, history of drug use and previous drug treatment, social needs, criminal record, economic status,

and personality characteristics.

In both the drug treatment and in the treatment research communities, there is broad consensus that drug abuse treatment works. However, identifying the most effective type of treatment and for whom it is most effective continues to be a difficult task. In this climate of managed care, it is more important than ever to determine which treatment will work best for which patient. The surest way to make this determination is through rigorous evaluation of treatment modalities, treatment programs, and patient outcomes.

EVALUATING THE EFFECTIVENESS OF DRUG ABUSE TREATMENT

Evaluating drug abuse treatment effectiveness begins with an understanding of a number of other factors related to the drug treatment modality or program itself. These include knowing the array of social, medical, and other services needed and available to the drug user; understanding the extent of drug use in a community; and understanding the nature and progression of drug addiction. The following sections discuss the considerations for treatment evaluation, definitions of effective drug abuse treatment, and recommendations for improving drug abuse treatment.

Considerations for Treatment Evaluation

For most drug users, treatment includes a variety of social and medical services necessary to aid recovery. For hardcore drug users (i.e., those suffering from continuing and increasing use, those suffering from significant social and health consequences, and those with a preoccupation with obtaining drugs), drug treatment occurs within a cluster of legal, social, and medical services functioning in the community. Knowledge of the ways in which these services are integrated and delivered is important to determine what can be expected from treatment and how to evaluate the treatment provided.

Interventions required by the hardcore drug user typically involve the criminal justice system, the health care system, and the welfare and educational systems. These, together with the drug abuse treatment system, serve the drug user in the process of treatment and recovery. These services sometimes, but not always, are delivered in a coordinated, supportive, and integrated fashion. The greater the support given the drug user throughout the process of treatment and long-term recovery, the greater the likelihood of treatment success. In reality, few communities claim fully functional provision of services for all persons in need, especially drug users. It is the degree of function or dysfunction of the treatment and service environment that must be understood to formulate expectations and accurately evaluate drug treatment effectiveness.

The extent and types of drug abuse in a community also must be gauged accurately to evaluate the array of required services. Ideally, the drug use patterns, medical and social consequences, and costs of drug abuse should be understood. In addition, understanding the nature of addiction is important to structuring and evaluating appropriate treatment services.

Defining Effective Drug Abuse Treatment

Given what is known about the many social, medical, and legal consequences of drug

abuse, effective drug abuse treatment should, at a minimum, be integrated with criminal justice, social, and medical services and lead to the following results or outcomes:[1]

- Reduced use of the primary drug. -- Definitions of treatment effectiveness include abstinence, reduced time to relapse, reduced frequency of drug use, and the reduced amount of the drug used in total and during each episode of use.

- Improved functioning of drug users in terms of employment. -- This includes increased number of days worked and enrollment in training programs or school, if needed.

- Improved educational status. -- This includes increased school attendance and improved grades and overall performance.
- Improved interpersonal relationships. -- This includes relationships with family, friends, and employers.
- Improved medical status and general improvement in health. -- This is indicated by fewer hospitalizations, doctor visits, and emergency room visits.
- Improved legal status. -- This is indicated by improvements in current legal status (e.g., probation, parole, or incarceration); fewer arrests; fewer convictions; reductions in crimes committed against self or others; and reductions in property crimes committed.
- Improved mental health status. -- This includes improved mood and cognition, reduced psychotic states, improved personality traits, and reduced need for mental health treatment.

- Improved noncriminal public safety factors. -- This includes reduced incidence of drug-related fires, motor vehicle crashes, accidents, trauma to self and others, and emergency room visits.

Among the indicators of treatment effectiveness cited above, the following are frequently cited as particularly important when determining treatment effectiveness among hardcore drug users, regardless of treatment model or client type:

- Reduced crime;
- Reduced drug use;
- Reduced domestic violence;
- Reduced behavior at risk for HIV (human immunodeficiency virus) infection;
- Increased days of employment; and
- Positive changes in social values and networks.

Recommendations for Improving Drug Abuse Treatment

Effective drug abuse treatment requires a thorough assessment and integration of the needs of every individual entering treatment. Matching client needs to the treatments and services available is an essential component of treatment success. In the short term, tailoring and integrating treatment and related services to the needs and characteristics of the individual and the specific drug that is abused may be time-consuming and costly, but the reduction of drug use and therefore the need for further treatment will provide the biggest payoff in the long term.

The following are areas in which many programs need to improve to reach the goal of

treatment success for drug-abusing clients, including hardcore drug users:

- Integration of services;
- Needs assessment;
- Efforts to engage clients in treatment;
- Client retention;
- Intensity of services;
- Cultural sensitivity in treatment programs;
- Staff training and retention;
- Data collection and management services; and
- Stable sources of funding.

In addition, the following elements of a national-level program evaluation system would allow thorough monitoring of treatment goals:

- A series of demonstration programs that closely monitor service delivery over a specified period of time;
- Selective, regionalized data collection to identify changes in drug abuse patterns, such as reductions in drug-related crimes and violence; and
- Development of nationwide policy indicators that policymakers and treatment professionals will agree represent minimum standards for treatment services.

Evaluation of drug abuse treatment must focus on the effects of treatment, not on the drug problem itself. Treatment goals must be realistic and reflect what is possible, as opposed to what is desirable, in treating a particular client.

Treatment research should focus on rates of improvement as a result of drug abuse treatment, rather than on simply documenting a "cure." The degree of change expected should be realistic and take into consideration the resources that are available to an individual client.

Treatment evaluation should assess and document (1) whether patients receive the treatment they need, (2) whether (and which) other improvements are needed in treatment, (3) whether the array of consequences of drug abuse are reduced because of the quality of treatment and other services provided, and (4) whether the benefits outweigh the costs of investing in the treatment system. Future research efforts should focus on evaluating these areas and on monitoring the ongoing needs of the drug-using population.

The remainder of this review will present and describe (1) what is known about effective treatment, (2) what research reveals about which treatments work best and for whom, and (3) how treatment effectiveness is measured and the limitations of such measurement. Although broad research literature has been reviewed to prepare this report, the emphasis is on treatment for the hardcore drug user (i.e., those with criminal histories and those with chronic, heavy use of heroin and cocaine).

EVIDENCE FOR TREATMENT EFFECTIVENESS

Determining treatment effectiveness is a complex endeavor that hinges on the interplay among many client, program, and environmental factors. After more than 25 years of evaluations of various types of treatment programs, there are surprisingly few

national longitudinal or multisite studies that offer universal, definitive "truths." However, three national multiprogram studies and one statewide study represent rigorous analysis of the effectiveness of the major treatment modalities (i.e., pharmacotherapies and the therapeutic communities, inpatient treatment settings, and outpatient treatment settings.)[2] These studies are known as the Drug Abuse Reporting Program (DARP), the Treatment Outcome Prospective Study (TOPS), the Drug Abuse Treatment Outcome Study (DATOS), and the California Drug and Alcohol Treatment Assessment (CALDATA). Although other studies of treatment effectiveness have been conducted and reviewed in preparation for this report, to date, these four studies are the broadest in scope. They were conducted with the largest populations in treatment, representing the widest variety of treatment programs, over the longest period of time. These studies and their findings in support of treatment effectiveness are described below.

Drug Abuse Reporting Program

DARP was conducted between 1969 and 1973 with individuals admitted into publicly funded drug treatment and for the first time provided a nationwide, comprehensive assessment of treatment effectiveness with a large client sample. It was the first national followup study to assess treatment effectiveness based on clients' outcomes 1 year after treatment. Major findings from the DARP study include the following: (1) the three major modalities -- outpatient drug-free, methadone maintenance, and therapeutic communities -- produced an equal level of positive outcomes and (2) clients in detoxification (i.e., inpatient) programs or those who dropped out of treatment within 3 months did not demonstrate positive outcomes.

Treatment Outcome Prospective Study

Building on the methodology and findings of DARP, from 1979 to 1981 the TOPS examined client characteristics, treatment, and outcomes for more than 11,000 clients in 41 methadone, residential, detoxification, and outpatient drug-free programs. Clients were assessed after 1 month in treatment; at 3-month intervals during treatment; and at intervals of 3 months, 1 year, 2 years, and 3 to 5 years after leaving treatment. Researchers in this study claimed that determining treatment effectiveness requires a consideration of both behavioral and psychological factors of those in treatment and an assessment of treatment success in terms of both drug use and improvement in related behaviors and attitudes. Consequently, the TOPS study concluded that effectiveness should be measured by changes in a client's antisocial (e.g., criminal) behavior, evidence of socially productive behavior (e.g., employment or school attendance), and cessation of drug use. The TOPS study found that 95 percent of individuals in residential treatment and 80 percent of individuals in methadone programs reported more than minimal drug use before entering treatment and a substantial reduction in use after 3 months of treatment. For example, of patients in residential programs for more than 13 weeks, 22.2 percent reported more than minimal use of heroin (not narcotics) before treatment. After 13 weeks of treatment, only 7.3 percent of the same population reported more than minimal use (Hubbard et al., 1989). Of those reporting illegal activity before drug treatment, 97 percent reported cessation of that activity during treatment. Furthermore, more than one-third of clients (across all programs) reported total abstinence from their primary drug during the followup period. Finally, a 50- to 57-percent decrease in indicators of depression was found in clients across all treatment modalities.

Drug Abuse Treatment Outcome Study

DATOS was conducted with groups of patients admitted to drug treatment between

1991 and 1993, and results are not yet available. DATOS is a multiyear, longitudinal study of 12,000 adult clients in more than 50 treatment programs (e.g., methadone maintenance, inpatient, long-term residential and therapeutic community, and outpatient drug-free programs) in 12 cities, with followup of 4,500 clients. One of the largest longitudinal prospective studies of treatment outcome ever conducted, DATOS will attempt not only to determine which treatments work but also to conduct a more indepth analysis of why various treatments work and for which patients. Preliminary data from this important study already are beginning to provide further insight into the most critical needs of patients entering treatment, who is and who is not entering treatment, and some of the barriers to successful treatment. For example, in a recent study comparing support services needed by TOPS and DATOS clients (based on self-reports), Etheridge and colleagues (1995) found a decline from "...TOPS to DATOS in the percentage of clients who reported having received and of the seven services [i.e., medical, psychological, family, legal, educational, vocational, and financial services] during the first 3 months of treatment." Furthermore, this trend was particularly evident for the DATOS methadone and outpatient treatment clients.

California Drug and Alcohol Treatment Assessment

In 1992 the California Department of Alcohol and Drug Programs launched a large-scale study of the effectiveness, benefits, and costs of alcohol and drug treatment in California. The purpose of CALDATA was to study the effects of treatment on participant behavior, the costs of treatment, and the economic value of treatment to society. CALDATA's key findings demonstrate that treatment is a good investment for taxpayers and saves money in terms of real costs attributed to drug-related crime, illness, and lost productivity. The specific findings are summarized as follows:

- The cost of treating the approximately 150,000 participants represented by the CALDATA study sample in 1992 was $209 million, while the benefits received during treatment and in the first year and thereafter were worth approximately $1.5 billion in savings to taxpaying citizens, due mostly to a reduction in crime.
- Treatment for problems with crack-cocaine and powdered cocaine was found to be just as effective as treatment for alcohol problems and somewhat more effective than treatment for heroin problems.
- The level of criminal activity declined by two-thirds from before treatment to after treatment. The greater the time spent in treatment, the greater the percent reduction in criminal activity.
- Alcohol and other drug use declined by approximately two-fifths from before to after treatment.
- Hospitalizations were reduced by approximately one-third from before to after treatment. There were corresponding significant improvements in other health indicators.
- For each type of treatment studied, there were slight or no differences in effectiveness between men and women; younger and older participants; or among African-Americans, Hispanics, and whites.
- Overall, treatment did not have a positive effect on the economic situation of the participants during the study period. However, the data indicate that longer lengths of stay in treatment have a positive effect on employment. This finding is greater for those in residential programs than for those in other treatment types. The largest gains in employment occur with those individuals staying in treatment beyond the first month.

These noteworthy large-scale studies of drug abuse treatment effectiveness conclude that treatment works. But which treatments are most effective, and for whom are they most effective? The answers to these questions remain elusive. Although treatment

programs have been studied for decades, many studies produce isolated, anecdotal evidence of success for individual treatment programs. However, if standardized research methodologies with comparable outcome measures had been used, the research may have provided definitive information regarding treatment effectiveness for specific types of problems or clients. What we do know, gathered from the programs that have been thoughtfully evaluated, demonstrates that most treatments are effective under particular conditions and for some people. More rigorous studies using comparable measures of success will help us to answer these questions more definitively.

A REVIEW OF WHAT IS KNOWN ABOUT TREATMENT MODELS THAT WORK

This section reviews information about the following drug abuse treatment models that have been proven effective: therapeutic communities (TCs), pharmacological treatment, outpatient drug-free treatment, and inpatient treatment.

Therapeutic Communities

TCs are intensive, long-term, self-help, highly structured residential treatment modalities for chronic, hardcore drug users who have failed at other forms of drug abuse treatment. More than one-third of all admissions (including dropouts) to TCs demonstrate long-term, successful outcomes 1 to 2 years after treatment. In addition, approximately 60 percent of all admissions show significant improvement on specific outcome variables 1 to 2 years after treatment. However, clients remaining in treatment longer than 12 months have the greatest likelihood of successful outcomes.

The following is known about TC treatment:

- Length of stay in treatment is predictive of outcome;
- Treatment is effective, although relapse is the rule; and
- Treatment is effective, although dropout is the rule.

TCs view drug use as a symptom of profound problems of personality, social maladjustment, inadequate interpersonal skills, little or no education, and few (if any) marketable job skills. In other words, the problem is the person, not the drug.

The environment of the TC, in supportive and confrontational aspects, serves to make clients aware of the role that their problems play in contributing to drug use. Elements of TCs (e.g., encounter groups, rule-setting and rule enforcement, rewards, and work) allow the client to learn -- often for the first time -- interpersonal, educational, and vocational skills and to develop psychological, moral, and social strengths that are fundamental to living a drug-free life, which is the common goal of all TCs.

The concept-based TC, often referred to as the "traditional" TC, is a departure from traditional psychiatric care (i.e., care in which the doctors are in control of treatment, rather than a modality in which patients exert control over their own recoveries). It is a self-help modality developed by recovering addicts. This modality has become widely accepted as an effective treatment approach for drug addiction and antisocial problems. Examples of TCs are San Francisco's Delancey Street Foundation and New York's Phoenix House, where the length of the residential stay ranges from 9 to 24

months and where residents move through explicit stages of treatment over time.

The TC atmosphere is informal and communal. TC staff comprise primarily recovered addicts and a limited number of professionals, such as psychologists. Staff and resident roles in all TCs are hierarchical in structure, with an explicit chain of command. New residents are assigned to work teams with the lowest status and are responsible for the most menial tasks, such as washing floors. As residents demonstrate increased competency and emotional growth, they are moved up the hierarchy, earning positions with improved status and privileges. These rewards are highly reinforcing. Group meetings are central to TC operations and treatment.

TCs provide an orderly environment for many who have lived in chaotic or disruptive settings, reduce boredom and distracts from negative preoccupations that in the past had been associated with drug use, and offer an opportunity to achieve satisfaction from a busy schedule and the completion of daily chores. However, because TCs are physically and psychologically demanding, the dropout rate is high, especially in the first 3 months. Only one in four voluntary clients remains longer than 3 months, while fewer than one in six complete the 1- to 2-year course of treatment. For those who do complete the program, the possibility of living a life free from drugs is greater than for those who drop out early.

Measures of TC Treatment Effectiveness

The goal of all TCs, and the way they define clinical effectiveness, is the promotion of a drug-free lifestyle through psychological habilitation and rehabilitation. Additional issues become important in TC treatment for specific populations. Drug-addicted pregnant women or women with children need to develop self-esteem, parenting skills, and ways to cope without drugs in an environment that nurtures both them and their children. Adolescent drug users need approaches to treatment that take into account their sense of denial and invulnerability. Drug-addicted incarcerated offenders need an environment in which they will be respected so that the dual goals of reduced recidivism to both prison and drug use will be met.

Good programs can be distinguished on the basis of well-defined treatment protocols, adequate staffing patterns and experience, explicit program goals, reasonable and consistent funding, and comprehensive management information systems.

Pharmacological Treatment

As with other types of settings, several factors govern the effectiveness of programs that use pharmacotherapy primarily:

- The intake population (i.e., substantial selection occurs during the screening process);
- The length of time an individual waits for treatment;
- The dropout frequency of those on the waiting list;
- The point at which the individual is in the treatment process;
- The client's environment;
- The points at which success is monitored;
- The services integrated into the overall service package; and
- The treatment process, including dosages, pattern and duration of treatment,

training of providers, funding, and program demand constraints.

In addition, as with other treatment modalities, programs that provide pharmacological treatment consider retention in treatment a measure of positive treatment outcome. Understanding who is retained and the referral history of clients can help programs prevent relapse and attrition.

The success of pharmacotherapy programs is well documented. A variety of pharmacological treatments for drug dependence and evidence of their effectiveness are described below.

Treatment of Opioid Dependence

Pharmacological treatments for opioid dependence frequently use one of two general approaches. The first approach is long-term treatment in which the addict is maintained with a legally sanctioned narcotic such as methadone. The second approach is short-term treatment in which the addict is intended to be detoxified to a drug-free state. This review will focus on long-term pharmacological treatment.

Pharmacological maintenance programs involve the long-term administration of a medication that either replaces the illicit drug or blocks its actions. The medication is administered for at least 1 month and can be administered for as long as several years. The goal of some programs is lifetime maintenance on medication. Lifetime maintenance may be warranted as patient needs and preferences dictate. For a discussion paper on Opioid Agonist Treatment, click below:

- Consultation Document on Opioid Agonist Treatment
  The objective of this paper is to encourage the expansion of effective treatment to increasing numbers of opiate addicts, most of whom are heroin users.

Methadone

Methadone is a narcotic analgesic that is an effective substitute for heroin, morphine, codeine, and other opiate derivatives. Opiates act quickly and wear off within a few hours of administration, producing withdrawal symptoms such as sleep disturbance, agitation, and mild depression. Long-lasting methadone doses are substituted for illicit opiates to suppress withdrawal symptoms. Methadone may be prescribed to assist in detoxification or to reduce the use of illicit drugs and the related criminal, social, and psychological problems associated with them.

Methadone is used to suppress opioid withdrawal symptoms for the entire 24-hour period between doses without producing euphoria or sedation. This treatment eliminates a major source of pressure to use illicit opioids (i.e., the discomfort of withdrawal). The use of methadone typically renders concurrent use of other opioids ineffective for purposes of producing euphoria.

Detoxification using methadone takes between 3 weeks and 6 months. The process begins with increasing the dosage of methadone and decreasing illicit opiate use without producing symptoms of withdrawal. Methadone doses eventually may be tapered down to zero. Attrition is reported to be high during the second week of 3-week programs, and patients show a rate of relapse greater than 90 percent.

Methadone maintenance programs frequently are long term, often lasting 12 months or longer. Participation in methadone maintenance programs enables recovering addicts to focus on their social and vocational rehabilitation and to become reintegrated into society, although they still are addicted to an opioid. Reducing the use of illicit drugs and reducing the commission of other crimes to finance the drug habit are the primary goals of methadone maintenance. Improved physical and psychological well-being and social productivity also are objectives.

A 1991 study sponsored by the National Institute on Drug Abuse focused on six established methadone maintenance programs in New York, New York; Philadelphia, Pennsylvania; and Baltimore, Maryland. Comprehensive data about the structure and operations of these programs were collected during a 3-year period. For example, the study found that the experience and education of counselors at these facilities varied. Each clinic had its own philosophy of treatment, which appeared to be strongly conditioned by the director's personal philosophy. Unfortunately, the criteria that constituted a successful outcome were often unclear to the counselors who were providing treatment. The only services applied consistently were case management and individual counseling sessions. Initial assessment by a counselor was consistently available at only one program. This study found that although opioid use declined markedly after admission, 82 percent of subjects who left treatment rapidly relapsed to intravenous drug use within 1 year. Crime was reduced substantially at all six programs.

Naltrexone

Naltrexone, an opioid antagonist, blocks the effects of opioids such as heroin, thereby discouraging their use. Naltrexone can be administered in small daily doses or in larger doses three times per week. To avoid intensified withdrawal symptoms, patients must be completely detoxified from opioids before naltrexone can be used. Detoxification can be accomplished with the aid of buprenorphine or clonidine.

Naltrexone is typically an adjunct to individual, group, or family therapy. In general, naltrexone is thought to work best for highly motivated patients, especially those with social supports. Consequently, the retention rate appears to be greatest for health professionals and others with high social and economic status. Patients with appropriate external motivations, such as fear of job loss or return to prison, may also find success using naltrexone if they have family support.

In 1986 researchers reported on the success of naltrexone programs serving three general types of patients. The key findings of this study are summarized below:

- The Veterans' Administration in Philadelphia treated 327 outpatient addicts for an average of 9 years. At the 6-month followup, 32 percent of patients receiving naltrexone for more than 30 days remained opioid free.
- Middle-class suburban subjects who had been using opioids for an average of 10.5 years were studied in 13 California clinics. Included in this study were 42 former heroin addicts who had been maintained with methadone, levo-alpha-acetylmethadol (LAAM), or other medications prior to naltrexone treatment. Most of these subjects were employed. Outcomes studied were drug use and treatment retention. Retention averaged only a few weeks but was clearly helped by counseling. It was concluded that the use of naltrexone appears to promote long periods of opioid abstinence but does not prevent subsequent relapse.
- Of the 114 business executives treated at Regent Hospital in New York City

and at Fair Oaks Hospital in Summit, New Jersey, all had been addicted for at least 2 years and had entered treatment under serious threat of losing their jobs. The initial phase of the programs, lasting 4 to 10 weeks, consisted of treatment with clonidine detoxification, group therapy, peer group meetings, family meetings, individual therapy, educational sessions, and physical exercise. The second phase consisted of outpatient naltrexone treatment for at least 6 months in conjunction with group and/or individual therapy, self-help groups, and urine monitoring. Outcomes reported were drug use, employment, and retention in treatment. At 12- to 18-month followup, 64 percent of subjects were still opioid free. Patients who completed at least 6 months of treatment were more likely to be opioid free, employed, and continuing therapy or participating in a self-help group than those who discontinued treatment shortly before hospital discharge.

Buprenorphine

Buprenorphine, a medication still in the experimental stage, exhibits mixed opioid-like and opioid-antagonist properties. It causes dependence in those not already taking opioids but acts as an antagonist to precipitate withdrawal in those who are opioid dependent. Maintenance buprenorphine treatment, like methadone, seems to reduce craving, enhance treatment retention, and block the effects of illicit opioids. Buprenorphine is more frequently used as an aid to detoxification.

LAAM

Long-acting opioid maintenance compounds, such as LAAM, are being developed to overcome the need for daily clinic attendance required by methadone maintenance. LAAM has been shown to suppress withdrawal symptoms in opioid-dependent subjects for 72 to 96 hours. Its delayed onset results in fewer sedative effects and less euphoria than methadone.

Clinical trials of LAAM suggest that it is comparable to methadone maintenance in clinical safety and efficacy but offers a number of advantages. First, its long duration of action allows clinic attendance to be reduced from daily attendance to attendance three times per week. The need for take-home doses that may be diverted to street use is eliminated. LAAM also increases the clinics' treatment capacity since fewer clinic visits per patient are required. Fewer clinic visits further reduces the patient's feelings of dependence on the clinic. Second, slower onset and more sustained action reduce feelings of sedation and decrease its attractiveness to street addicts as a potential drug of abuse.

Treatment of Cocaine Dependence

Both short-term and long-term medications have been studied for their potential to treat addiction to cocaine and its derivatives. None of these medications has been accepted for widespread use. Short-term medications (e.g., amantadine and bromocriptine) have been shown to reduce symptoms of cocaine withdrawal (e.g., cocaine craving, lack of energy, depression, and insomnia). Long-term agents have a delayed onset of action in reducing cocaine craving. For example, desipramine's onset of action is usually delayed for 10 to 20 days.

Fluphenthixol decanoate has both antidepressant and antipsychotic properties. Preliminary research on this medication has shown it to be effective in ameliorating cocaine withdrawal symptoms. In experimental research, fluphenthixol has been found

to decrease cocaine use markedly, resulting in a 260-percent increase in the average time a patient was retained in treatment compared with their longest previous stays.

Measures of Pharmacological Treatment Outcome

Outcome measures used for evaluating pharmacological treatments depend on the philosophy of the individual program and the goals of the researchers. Short-term pharmacological treatment generally implies detoxification. Medications for detoxification are usually evaluated in terms of immediate pharmacological effects and retention in treatment for the several days that detoxification requires. These medications are intended to subdue physical withdrawal symptoms.

Medications for long-term or maintenance treatment (e.g., methadone or naltrexone) are usually evaluated for overall effectiveness and are measured by such factors as retention in treatment as part of specific programs. Outcome measures have included the following (separately or in various combinations):

- Drug use. -- This is measured in terms of use of heroin, total opiates, cocaine, intravenous drugs, depressants, marijuana, or alcohol.
- Criminality. -- This is expressed by number of arrests or convictions, time spent in jail, number of days involved in crime, percent of income derived from crime, or dollar amount derived from crime.
- Productivity. -- This is defined by employment, school, or homemaking.
- Medical problems. -- This includes days having medical problems, time physically disabled, and reduction of intravenous-related risk factors such as AIDS (acquired immune deficiency syndrome) and hepatitis.
- Psychological functioning. -- This is usually measured with standard instruments, such as the Beck Depression Inventory.
- Social functioning. -- This is usually measured as the number of days having family or other interpersonal problems.

Many researchers use the Addiction Severity Index (ASI) for all measurements. The ASI is a structured clinical interview that can be administered in 30 minutes. It produces 10-point problem severity ratings in each of 6 areas commonly affected by addiction: drug abuse, physical health, employment, family/social supports, the law, and psychological health. "Current functioning" combines ASI measures of employment, drug use, family, and psychological problems for the past month. In addition, the ASI has proven to be extremely useful as a set of relevant measurement outcomes in clinical trials examining addictive disorders.

Outpatient Drug-Free Treatment

Some researchers consider outpatient drug-free treatment to be the "backbone" of treatment efforts in most parts of the United States. Outpatient drug-free treatment includes a range of protocols, from highly professional psychotherapy to informal peer discussions. Counseling services vary considerably and include individual, group, or family counseling; peer group support; vocational therapy; marital therapy; and cognitive therapy. Aftercare, considered necessary to prevent relapse, typically consists of 12-step meetings, periodic group or individual counseling, recovery training or self-help and relapse prevention strategies, and/or vocational counseling.

The National Drug Abuse Treatment System Survey, conducted in 1988, indicated that

outpatient drug-free programs have an average of 9 staff members, compared with 13 in methadone maintenance programs, and tend to have more staff members with advanced academic degrees and with drug abuse treatment certification or training than do methadone maintenance programs. TOPS found that outpatient drug-free programs are more likely than other modalities to employ psychologists and social workers.

Measures of Outpatient Treatment Effectiveness

While abstinence appears to be the ideal goal of outpatient drug-free treatment programs, reduced drug use is commonly viewed as a more realistic objective and also is considered a sign of treatment efficacy. The clinical measures of effectiveness are particularly difficult to discern due to the enormous diversity within the modality and the relative scarcity of available outcome studies. Like the other major modalities, outpatient drug-free programs most often focus on clients' drug use when assessing treatment effectiveness. Studies indicate that outpatient drug-free programs are more likely than outpatient methadone programs to stress abstinence as an outcome. Even so, relapse is common and is not considered a sign of treatment failure. Other common measures of effectiveness, depending on the intensity and range of services offered by particular programs, are improved employment status, reduced criminal activity, and a wide variety of psychosocial factors. Programs specifically for women consider other outcomes, such as improved perinatal outcomes and parenting skills, as significant signs of treatment effectiveness.

Outpatient drug-free treatment programs continue to grow in number and diversity. As more and more people turn to outpatient treatment as a cost-effective treatment modality, a clearer understanding will be needed regarding the effects that these treatments have on overall long-term outcomes.

Inpatient Treatment

Inpatient treatment refers to the treatment of drug dependence in a hospital and includes medical supervision of detoxification. Inpatient drug treatment programs traditionally lasted for 28 days, although this duration has changed considerably since the emergence of managed care models in substance abuse services and currently range from as little as 3 days to longer, more traditional lengths of stay. Criteria for hospitalization of the cocaine abuser are as follows:

- Users whose drug compulsions are uncontrollable, especially heavy freebasers[3] and intravenous drug users;
- Users with physical dependence on other drugs or alcohol;
- Users with severe medical or psychiatric complications;
- Users with severe psychosocial impairments; and
- Users who have failed in outpatient treatment.

Admission to inpatient programs to treat dependence on drugs other than cocaine is equally stringent, often using the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition criteria for drug use disorders.

The primary objective of inpatient drug-free treatment is to help the patient achieve and maintain a drug-free lifestyle. Additional objectives include the following: decreased involvement in illegal activities; increased productivity in work or school settings;

improved social, family, and psychological functioning; and improved physical health. Improved psychological and family functioning facilitates improvement in other areas as well. There are different types of inpatient programs, serving different types of clientele. Those discussed below are therapy-based programs, 12-step programs, and multimodality programs.

Therapy-Based Programs

Therapy-based programs, also referred to as psychiatric inpatient programs, tend to serve older or middle-class patients, adolescents whose drug use has not yet developed the secondary characteristic of drug addiction, and patients who have a specific psychiatric problem in addition to drug use. Psychiatric programs require a 4- to 12-week length of stay, although adolescent treatment may be longer. Programs generally begin with detoxification, followed by a variety of services, including individual, group, and family therapy; education; and training in behavioral techniques, such as relaxation and exercise. Participation in Alcoholics Anonymous (AA) or Narcotics Anonymous (NA) is required. Psychiatric inpatient programs are described as more useful for older, middle-class, or blue-collar patients. Addicted health professionals constitute a specific patient population that appears to benefit from psychiatric inpatient treatment.

12-Step Programs

Twelve-step programs, such as the Minnesota Model (patterned after the Hazelden program in Minnesota), are based on a model of total abstinence. Certified counselors (often recovering addicts) conduct most of the group and individual counseling, with program staff providing consulting and resource backup as needed. Counseling is focused on family and other interpersonal relationships. Patients work on at least the first four steps of the AA model while in the treatment program, with progression through the remaining eight steps expected through subsequent involvement with AA or NA. Detoxification and health assessment also are included in 12-step programs.

Patients in 12-step programs generally are middle-class or working-class males with a high school education who do not have co-occurring psychiatric disorders. Lower rates of abstinence were reported for clients under age 25. Twelve-step treatment is reportedly more effective for middle-age participants than for those in other age groups.

Multimodality Programs

Multimodality programs, pioneered by Jaffe (1973) and Kleber (1985), offer a variety of services, including inpatient treatment, medical care, outpatient brief treatment, vocational training, educational enhancement for adolescents, family therapy, adult or adolescent TCs, methadone maintenance, group psychotherapy, individual psychotherapy, drug education, and stress-coping techniques. Multimodality programs require coordination among noncompetitive treatment programs. These options often exist within a single community.

Treatment options differ from program to program. A case manager or client representative assists patients in selecting appropriate treatment options. Inpatient treatment generally is required at some point in the multimodal treatment process. Patients may be transferred into or out of different treatment modalities based on progress, which is assessed by evaluation staff and the case manager. Criteria for transfer include the following: level of compulsion or severity of drug use, psychiatric or

psychological impairment, compliance with program requirements, and improvement in psychological functioning.

Inpatient treatment is not an option for everyone, including many drug-using women with children. Few programs provide childcare services; foster care may be the only option for women who require inpatient treatment, especially for low-income families and single women. Many women avoid treatment for fear that they will be unable to regain custody of their children after completing treatment. Pregnant women may risk criminal charges for drug use during pregnancy and may therefore refrain from seeking treatment.

Measures of Inpatient Treatment Effectiveness

Abstinence is the most common goal of inpatient treatment programs and the most widely used measure of clinical effectiveness. Abstinence, by most definitions, means refraining from use of all drugs, including the primary drug of dependence (generally cocaine or heroin), alcohol, marijuana, and all other mood-altering drugs. Measures of abstinence, however, may be divided into separate measures for abstinence from the primary drug of dependence, alcohol, marijuana, and other drugs. Alternately, abstinence may be measured by the length of time the patient remains drug free during the followup period or by the frequency of subsequent drug use.

Measures of clinical effectiveness focus on continuance of a drug-free lifestyle and evidence of improved psychological functioning and social skills for all inpatient programs reviewed. All programs measured total abstinence, although some included data on levels of use for nonabstainers and an indication as to whether data were self-reported or verified objectively. Participation in aftercare, another measure of treatment effectiveness, is an important factor in preventing relapse and continued development of coping skills.

Intake data are benchmarks against which posttreatment lifestyle measures are compared. The CATOR (the Chemical Abuse/Addiction Treatment Outcome Registry) methodology and studies using the ASI are examples of pretreatment and posttreatment measures of outcome variables.

INTEGRATING SERVICES FOR SUCCESSFUL OUTCOME

Regardless of the setting (e.g., inpatient, outpatient, or residential), a successful course of treatment will combine therapies, services, and methods that produce favorable outcomes. Since drug users, especially hardcore drug users, face many related problems (e.g., high-risk environment, unemployment, lack of education, and physical and sexual abuse), effective treatment requires several critical elements, including the following:

- Complete and ongoing assessment of the client;
- A comprehensive range of services, including pharmacological treatment, if necessary; counseling, either individual or group, in either structured or unstructured settings; and HIV-risk reduction education;
- A continuum of treatment interventions;
- Case management and monitoring to engage clients in an appropriate intensity of services; and

- Provision and integration of continuing social supports.

These elements, rather than the specific treatment models, determine whether a program will be successful in treating individual clients and affecting the broader social or community problems that exist because of drug abuse.

In conclusion, drug addiction is a complex disorder involving a range of biological, psychological, and often environmental factors. Often a chronic, relapsing disorder, treatment works when those who abuse drugs can be engaged and retained in treatment and when other needed services can be integrated with drug treatment itself and delivered to help clients resolve the range of problems that accompany their drug use.

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[1] SOURCE: Treatment Outcome Working Group, a meeting of treatment and evaluation experts in 1993 that was sponsored by ONDCP. The meeting's goal was to provide recommendations to improve treatment outcome research. Recommendations throughout this report are based on findings of the group and on research conducted with this study.

[2] Treatment programs have evolved over time from this traditional categorization, which is the categorization used in research literature. Today many programs combine elements from more than one modality.

[3]"Freebase," a concentrated form of cocaine that is smoked, is prepared by extracting (freeing) the alkaloid (base) from the salt of the drug.

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TREATMENT OUTCOME WORKING GROUP

Panel Members

Douglas Anglin, Ph.D.
Drug Abuse Research Center
University of California, Los Angeles
Los Angeles, California

Antonio Cardozo
New Jersey Department of Health Division of Alcohol, Drug Abuse, and Addiction Services
Trenton, New Jersey

Sam di Menza
Rehabilitation Systems Incorporated
Pasadena, Maryland

George DeLeon, Ph.D.
Center for Therapeutic Research
New York, New York

Frank Gawin, M.D.
Addiction Research Consortium
University of California, Los Angeles
Los Angeles, California

Barbara Havassey, Ph.D.
Treatment Outcome Research
University of California, San Francisco
San Francisco, California

Melody Heaps
Illinois TASC
Chicago, Illinois

Norman Hoffman, Ph.D.
New Standards Institute
St. Paul, Minnesota

Robert Hubbard, Ph.D.
Research Triangle Institute
Research Triangle, North Carolina

James Inciardi, Ph.D.
Center for Alcohol Studies
University of Delaware
Newark, Delaware

Duane McBride, Ph.D.
Behavioral Sciences Department
Andrews University
Berrgin Springs, Minnesota

Thomas McClellan, Ph.D.
Drug Dependence Treatment and Research Center
Veterans Administration Medical Center
Philadelphia, Pennsylvania

Alex McCloud
Native American Rehabilitation Association of the Northwest
Gresham, Oregon

Norman Miller, M.D.
Department of Psychiatry
University of Illinois at Chicago
Chicago, Illinois

Dwayne Simpson, Ph.D.
Institute of Behavioral Research
Texas Christian University
Fort Worth, Texas

(SIDEBAR)

Substance-Abusing Population in Treatment

NATIONAL DRUG AND ALCOHOLISM TREATMENT UNIT SURVEY

When discussing treatment protocols and effectiveness, it is helpful to know the number of people in the United States currently involved in treatment for substance abuse and to understand the characteristics of the population in treatment. The National Drug and Alcoholism Treatment Unit Survey (NDATUS) is a primary source of national data on specialty substance abuse treatment and the population seeking such treatment; therefore, NDATUS is used to provide a representative point of reference in this report.

NDATUS collects services data for 1 day out of the year. This "snapshot" provides an indication of the scope and costs of annual treatment services, albeit, to the extent that flow of admissions, duration of treatment episodes, and nature of treatment services are stable throughout the year. Although treatment services are changing in light of the

development of the services environment and the introduction of managed care, NDATUS is believed to be the most representative source of information on treatment nature, type, and duration.

CLIENTS IN TREATMENT

On September 30, 1992, approximately 945,000 individuals were undergoing specialty substance abuse treatment. This represents an average of 432 clients ages 12 and older per 100,000 in the general population. However, the number of clients varies across the Nation. Of the four census regions, the highest rate of specialty treatment clients was found in the West (656 per 100,000). The Northeast had a rate of 539 clients per 100,000, the Midwest was below the national average with a rate of 361 clients per 100,000, and the South had the lowest rate average of 293 per 100,000.

SUBSTANCES OF ABUSE

Since 1991 NDATUS has classified clients by whether they were being treated for drugs only, alcohol only, or both alcohol and drugs. Besides identifying the actual substances abused by clients, this classification might also reflect treatment service provider expectations. For example, if a provider is oriented toward alcohol abuse, the provider is more likely to report that its clients abuse alcohol. State funding, licensing, and reporting practices also may influence the reporting of clients' problems.

Among clients in treatment, simultaneous abuse of illicit drugs (e.g., cocaine, opiates, and marijuana) and alcohol was the most common pattern of substance abuse (38 percent). Thirty-seven percent abused only alcohol, while 25 percent abused only drugs.

CLIENT DEMOGRAPHICS

The demographic data for clients has been collected by NDATUS since 1980. Actual numbers of clients cannot be compared over time because of fluctuations in survey coverage; therefore, the proportion of clients in each demographic category are compared. Comparing the proportion of clients as opposed to the number of clients in each category allows an assessment of how the mix of clients may have changed over time, highlighting potential survey discontinuities.

An analysis of the demographic data revealed the following information:

- In 1992, 72 percent of clients in specialty substance abuse treatment were male. This percentage represents a slow decline in the proportion of men in treatment, who comprised 75 percent of the total in 1980.

- The age pattern of clients has changed. The proportion of clients ages 21 to 44 rose from 62 percent in 1980 to 75 percent in 1992, while the proportion of clients under age 21 or over age 44 declined substantially.

- In 1992 white clients represented the largest proportion of clients in treatment (60 percent). Blacks, Hispanics, and Native Americans were overrepresented when compared with their proportions of the general population. Blacks comprised 22 percent of treatment clients, compared with 12 percent of the general population; Hispanics represented 15 percent of treatment clients, compared with 10 percent of the general population; and Native Americans

comprised 1.3 percent of treatment clients, compared with 0.7 percent of the general population.

TREATMENT SERVICES

Analysis of the demographic data revealed the following information on treatment services:

- In 1992, 87 percent of daily clients[1] were enrolled in outpatient rehabilitation. The remaining 13 percent were in 24-hour treatment.

- The proportion of outpatient rehabilitation clients increased steadily from 1982 to 1992. The proportion of outpatient methadone clients remained between 12 and 15 percent of all clients.

- In 1992 the proportion of clients in 24-hour detoxification treatment was less than 6 percent in all States and 3 percent or less in 40 States. However, States varied widely in their proportion of clients in outpatient versus 24-hour rehabilitation and in their proportion of outpatient methadone clients.

- When States are ranked by number of clients per 100,000 in the general population, there appears to be a positive correlation between clients per 100,000 and the proportion of clients in outpatient treatment. That is, the larger the rate of clients in treatment, the greater the proportion of clients in outpatient care.

The predominance of outpatient services over 24-hour rehabilitation has two caveats. First, it is more difficult for providers to accurately count the number of outpatient clients than 24-hour rehabilitation clients because the definition is more complicated, more records must be reviewed, and many "actively enrolled" clients who scheduled appointments during the past month may not return. As a result, many respondents may estimate the number of active outpatient clients without any detailed review of clinical records.

Second, because 24-hour treatment clients typically have shorter lengths of stay, more clients are admitted to 24-hour slots than outpatient slots during a year. Consequently, the proportion of 24-hour clients measured on this 1-day census is lower than it would be if clients were reported on an annual basis.

MATCHING CLIENTS TO TREATMENT

As stated earlier, for each treatment type, NDATUS enumerates the number of clients being treated for alcohol only, drugs only, or both alcohol and drugs. Although it is difficult to classify problem severity with only these three categories of substance abuse, clients who use both drugs and alcohol are more likely to have severe dependency problems.

Clients with both alcohol and drug problems also receive the most intensive treatment. In 1992, 20 percent of clients using both substances were in 24-hour treatment versus 10 percent of clients using only drugs and 8 percent using only alcohol. In 1991, 19 percent of clients using both substances were in 24-hour treament versus 12 percent using only drugs and 8 percent using only alcohol.

Two possible reasons explain why clients with polysubstance abuse are more often treated in 24-hour programs: (1) They may be more disabled by their substance abuse, thereby requiring round-the-clock care or (2) they may need to be taken out of environments that perpetuate substance abuse.

-- Jason M. Novak

CSR, Incorporated

[1] The reader is referred to the NDATUS report for precise definitions of treatment categories.